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UNITED STATES PATENT AND TRADEMARK OFFICE

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Georgann S. Grunebach, Reg. No. 33,179June 1, 2007

Date

Please find attached re:

Inventor: Frank A. Taormina, et al.

Serial No.: 10/657,452

Filed: September 5, 2003

For: SATELLITE SYSTEM AND METHOD OF DEPLOYING SAME

> **SUBSTITUTE BRIEF ON APPEAL****PLEASE CONFIRM RECEIPT OF THIS FACSIMILE**

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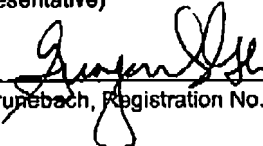
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Georgann S. Grunebach, Registration No. 33,179 (Signature)

June 1, 2007 (Date of Signature)**Customer Number 020991****Patent**  
**PD-980042D****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Frank Taormina et al.

Serial No. 10/657,452

Group Art Unit: 3644

Filed: 09/05/2003

Examiner: Tien Quang Dinh

For: SATELLITE SYSTEM AND METHOD OF DEPLOYING SAME

**SUBSTITUTE BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
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Sir:

In response to the Notice of Non-Compliant Appeal Brief dated May 15, 2007,  
Appellants submit the following Substitute Brief on Appeal.

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**I. Real Party in Interest**

The real party in interest in this matter is The DIRECTV Group, Inc of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

**II. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**III. Status of the Claims**

Claims 1-7 have been withdrawn. Claims 8-18 and 20 are pending in the application. Claim 19 has been canceled. Claims 8-18 and 20 are under appeal.

**IV. Status of Amendments**

There have been no amendments filed subsequent to the response to the Final Office Action of September 16, 2006.

**V. Summary of Claimed Subject Matter**

Claim 8 is the first independent claim and is directed to a communication system 10 for mobile and fixed service users. Claim 8 is best understood with respect to Figure 1. Claim 8 recites at least four satellites 12 in a medium earth orbit spaced in a first configuration to provide semi-global coverage. This is described on page 8, lines 16-25. Claim 8 also recites a first ground terminal having a fixed one-dimensional antenna which is described on page 9, lines 15-18. Claim 8 further recites a second ground terminal having a two-dimensional tracking antenna that is described on page 9, lines 18-22.

Claim 9 depends from claim 8 and recites that the at least four satellites are position-adjustable satellites 12 that are spaced apart such that subsequently deployed satellites can be interleaved between them. This is illustrated in contrasting Figures 3A and 3B. This is described on page 12, lines 5-25.

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Claim 10 depends from claim 8 and recites that the first or second ground terminal provides tracking and communication control at a fixed site 18. This is illustrated in Figure 1 and is described on page 8, line 26-page 9, line 13.

Claim 11 depends from claim 8 and recites that the first or second ground terminal provides network operational control for various communications. This is illustrated in Figure 1 and described on page 9, line 6.

Claim 12 depends from claim 8 and recites that the first or second ground terminal provides satellite position control at a fixed site. This is described on page 9, line 8.

Claim 13 depends from claim 8 and recites that the first or second ground terminal is coupled to a terrestrial communication link 26. This is described on page 9, lines 10-13.

Claim 14 depends from claim 13 and recites that the terrestrial communication link 26 is a phone line. This is described on page 9, line 12.

Claim 15 depends from claim 13 and recites that the terrestrial communication link 26 is a cable/television line. This is described on page 9, line 13.

Claim 16 depends from claim 9 and recites a second plurality of satellites interleaved between the at least four satellites 12 to increase the elevation angle at the most populated elevations. This is illustrated in Figures 3A and 3B and is described on page 11, line 13-page 12, line 16. Also, Figure 5 illustrates a plot of the number of satellites in the maximum latitude with 100% coverage. Figure 5 is described on page 14, lines 1-14.

Claim 17 recites at least one additional satellite deployed in a medium earth orbit and positioned between two adjacent satellites of the at least four satellites. This is also described on page 11, line 13-page 12, line 16.

Claim 18 depends from claim 17 and recites additional satellites in an inclined medium earth orbit. This is illustrated in Figure 3D and is described on page 12, line 26-page 13, line 14.

Claim 20 depends from claim 8 and recites that the at least four satellites are in the equatorial plane. This is illustrated in Figure 3A and is described on page 11, lines 15-17.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

The following issues are presented in this appeal:

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Whether Claims 8-15 and 20 are unpatentable under 35 U.S.C. §103(a) over *Drain* (U.S. Patent 5,979,832) in view of *Densmore* (U.S. Patent 5,398,035) and *McLeod* (U.S. Patent 3,618,097).

Whether Claims 8-18 and 20 are unpatentable under 35 U.S.C. §103(a) over *Stuart* (U.S. Patent 5,678,175) in view of *Densmore* (U.S. Patent 5,398,035) and *McLeod* (U.S. Patent 3,618,097).

## VII. Argument

### **The Rejection of Claims 8-15 and 20 under 35 U.S.C. §103(a) over *Drain* (U.S. Patent 5,979,832) in view of *Densmore* (U.S. Patent 5,398,035) and *McLeod* (U.S. Patent 3,618,097)**

#### ***Claim 8***

Claim 8 is directed to the use of at least four medium earth orbit satellites in the same orbit. By providing the satellites at in medium earth orbit, higher latitudes from those in a low earth orbit may be reached. This may be achieved without utilizing the scarce geostationary orbital positions and while enabling the reuse of geostationary frequencies. Claim 8 also includes a first ground terminal having a fixed one-dimensional antenna and a second ground terminal having a two-dimensional tracking antenna.

The Examiner cites the *Drain* reference for disclosing four satellites that are on medium earth orbit and on the equatorial plane. Appellants admit that a number of satellites are illustrated in *Drain* and that they may be MEO satellites.

Neither the *Densmore* nor the *McLeod* references teach at least four satellites in a medium earth orbit spaced apart in a first configuration or combining the antennas disclosed therein with such a configuration. Appellants admit that the *Densmore* reference teaches a two-dimensional tracking antenna. However, it also appears that the *McLeod* reference teaches a two-dimensional array system and not a one-dimensional system as purported by the Examiner. This is set forth in column 2, lines 19-26 of *McLeod*. Even if *Densmore* and *McLeod* stood for what the Examiner says they stand for, there is no teaching or suggestion for providing a one-dimensional antenna and a two-dimensional tracking antenna together in one communication system with at least four MEO satellites. Typical systems use one type of antenna and not both types. The Examiner has formed an impermissible hindsight reconstruction of the system of the invention using claim 8 as a guide. However, even when combined, both two-dimensional and

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one dimensional antennas are not set forth in one system. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 1.

**Claim 9**

Claim 9 recites that there are four satellites that are position-adjustable and that they are spaced apart so that subsequent satellites can be interleaved therebetween. The Examiner points generally to the *Drain* reference for this teaching. However, the Examiner points to no specific teaching in the *Drain* reference for this proposition. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 9.

**Claim 10**

Claim 10 stands or falls together with claim 8.

**Claim 11**

Claim 11 stands or falls with respect to claim 8.

**Claim 12**

Claim 12 stands or falls together with claim 8.

**Claim 13**

Claim 13 stands or falls together with claim 8.

**Claim 14**

Claim 14 stands or falls together with claim 8.

**Claim 15**

Claim 15 stands or falls together with claim 8.

**Claim 20**

Claim 20 stands or falls together with claim 8.

**The Rejection of Claims 8-18 and 20 under 35 U.S.C. §103(a) over *Stuart* (U.S. Patent 5,678,175) in view of *Densmore* (U.S. Patent 5,398,035) and *McLeod* (U.S. Patent 3,618,097)**

**Claim 8**

In column 9 lines 20-25, *Stuart* specifically states the constellation could be used for "any configuration that does not utilize geo-stationary orbit spacecraft flying at orbits at an altitude of approximately 23,000 miles, except for using geo-stationary spacecraft as a communications link." However, *Stuart* clearly does not contemplate the use of middle earth orbit satellite systems. This is evident in several respects. *Stuart* specifically describes the use of low earth

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orbit satellites at an altitude from about 800 to 1852 km. This is substantially different than the altitudes described in the present application of about 10000 km and about 15000 km. The drawbacks of providing such a system as described in the *Stuart* reference include minimal coverage to higher latitudes of the earth. *Stuart* specifically mentions that this embodiment is designed to furnish service to Mexico and to a large number of developing countries. To provide further coverage throughout the world, polar and inclined orbits must be incorporated into *Stuart's* system which will substantially increase the cost of providing coverage to the higher populated areas of the world.

Even if the Board finds that *Stuart* suggests using medium earth orbit satellites, there is no teaching or suggestion for forming the combination with *Densmore* and *McLeod*. As mentioned above with respect to the previous argument, the *Densmore* and *McLeod* references do not teach or suggest the use of a one-dimensional antenna and a two-dimensional tracking antenna in combination with at least four medium earth orbit satellites. The *McLeod* reference, as mentioned above, is also believed to be directed to a two-dimensional antenna. Therefore, there is no teaching or suggestion for forming a combination and, even if the combination of the references is performed, claim 8 is not recited. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 8 and this rejection.

***Claim 9***

Claim 9 recites that the satellites are position-adjustable so that satellites can be interleaved therebetween. The Examiner merely mentions that the *Stuart* reference has spaced-apart satellites. However, there is no teaching or suggestion for interleaving subsequently deployed satellites therebetween. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 9 as well.

***Claim 10***

Claim 10 stands or falls together with claim 8.

***Claim 11***

Claim 11 stands or falls together with claim 8.

***Claim 12***

Claim 12 stands or falls together with claim 8.

***Claim 13***

Claim 13 stands or falls together with claim 8.

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***Claim 14***

Claim 14 stands or falls together with claim 8.

***Claim 15***

Claim 15 stands or falls together with claim 8.

***Claim 16***

Claim 16 recites a second plurality of satellites are interleaved between the at least four satellites to increase the elevation angle at the most populated elevations. As mentioned above, the *Stuart* reference teaches employing polar and inclined orbits to increase service to higher elevations. Therefore, the *Stuart* reference actually teaches away from interleaving more satellites to increase the elevation angle of coverage of the communication system. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 16.

***Claims 17***

Claim 17 is also believed to be allowable for the same reasons set forth above with respect to claim 16. Claim 16 recites that at least one additional satellite is deployed in a medium earth orbit between two adjacent satellites of the at least four satellites. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 17 as well.

***Claims 18***

Claim 18 depends from claim 17 and recites that there are additional satellites that are deployed in an inclined medium earth orbit. The combination of inclined medium earth orbit satellites and equatorial medium earth orbit satellites is not taught or suggested in the *Stuart* reference.

***Claims 20***

Claim 20 recites that the four satellites are in the equatorial plane. Although the *Stuart* reference teaches satellites in an equatorial plane, no teaching or suggestion is provided for medium earth orbit satellites and an equatorial plane. Therefore, Appellants respectfully request the Examiner to reconsider this rejection as well.



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**VIII. Claims Appendix**

A copy of each of the claims involved in this appeal, namely claims 8-18 and 20, is attached as a Claims Appendix.

**IX. Evidence Appendix**

None.

**X. Related Proceedings Appendix**

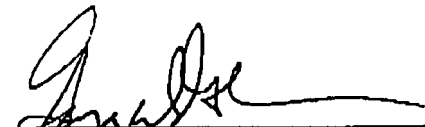
None.

**XI. Conclusion**

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to Deposit Account 50-0383.

Respectfully submitted,

Dated: June 1, 2007By:   
Georgann S. Grunebach, Registration No. 33,179  
Attorney for Appellants

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**CLAIMS APPENDIX**

8. A communication system for mobile and fixed service users, comprising:  
at least four satellites in a medium earth orbit spaced in a first configuration to provide semi-global coverage;  
a first ground terminal having a fixed one-dimensional antenna; and  
a second ground terminal having a two-dimensional tracking antenna.
9. A communication system as recited in claim 8 wherein said at least four satellites are position-adjustable satellites that are spaced apart such that subsequently deployed satellites can be interleaved therebetween.
10. A communication system as recited in claim 8 wherein said first or second ground terminal provides tracking and communication control at a fixed site.
11. A communication system as recited in claim 8 wherein said first or second ground terminal provides network operational control for various communications.
12. A communication system as recited in claim 8 wherein said first or second ground terminal provides satellite position control at a fixed site.
13. A communication system as recited in claim 8 wherein said first or second ground terminal is coupled to a terrestrial communications link.

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14. A communication system as recited in claim 13 wherein the terrestrial communications link is a phone line.

15. A communication system as recited in claim 13 wherein the terrestrial communications link is a cable/television line.

16. A communication system as recited in claim 9, further comprising a second plurality of satellites interleaved between said at least four satellites to increase the elevation angle at the most populated elevations.

17. A communication system as recited in claim 9, further comprising at least one additional satellite deployed in a medium earth orbit and positioned between two adjacent satellites of the at least four satellites.

18. A communication system as recited in claim 17, further comprising additional satellites in an inclined medium earth orbit.

20. A communication system as recited in claim 8, wherein said at least four satellites are in the equatorial plane.

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**IX. Evidence Appendix**

None.

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**X. Related Proceedings Appendix**

None.